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(54) **Personalized real time information display**

Personalisierte Echtzeitinformationsanzeige

Affichage d'informations personnalisé en temps réel

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Description

Field of the Invention

[0001] This invention relates generally to the provision and display of information, and, in particular, to a system and method for personalizing a screen saver display on a personal computer (PC) or other visual display device, so that the screen saver display is periodically changed to include current up-to-date information related to items that interest the user of the PC.

Background of the Invention

[0002] A user having a display device such as a personal computer (PC) or a similar visual display device such as a screen telephone), often will employ a screen saver to display pictorial information on the device when the device has remained inactive for a predetermined period of time. While the screen saver can be personalized to cause various time-varying patterns to be displayed, thereby avoiding burn-in on the screen surface, the display does not itself convey useful information to the user.

[0003] Details of prior art relevant to this invention can be found in Wyle M F: 'A Wide Area Network Information Filter', Proceedings International Conference Artificial Intelligence. On Wall Street, 9 Oct. 1991, New York, 9 October 1991, pages 10-15, and Schirmacher A: 'Assembler program for the Macintosh', Mikrocomputer Zeitschrift, Aug. 1987, West Germany, no. 8, ISSN 0720-4442, pages 76-79, Wyle M.F. discloses a system for information filtering where agents gather personalized information from different sources according to centrally stored user profiles, rank the collected information and displayed it on display devices. fails to teach the display of personalized information as a screen server. Schirmacher A. discloses the use of screen servers for avoiding the shutdown of a computer but fails to teach the display of personalised, time-varying information as a screen server.

Summary of the Invention

[0004] The invention provides a system, method and computer readable medium as set out in the accompanying claims

Brief Description of the Drawings

[0005] The present invention will be more fully appreciated by consideration of the following detailed description which should be read in light of the accopanying drawings in which:

Fig. 1 is a block diagram illustrating the overall arrangement of the present invention and the environment in which the invention operates;

Fig. 2 is a block diagram illustrating the arrangement of database 135 within server 130 of Fig.1;

Fig.3 is a flow diagram illustrating one embodiment of the process used to provide customised, up to date information to a personal computer end user device; and

Fig.4 is an example of an "At-A-Glance" screen saver display which integrates personalized information obtained from a variety of user-specified services using the present invention.

Detailed Description

[0006] Referring first to Fig.1, there is shown a block diagram illustrating the overall arrangement of the present invention and the environment in which the invention operates. A service node, designated generally as 120, is arranged to provide a plurality of users having personal computers 101 (or other terminals with visual display capability), with personalized, up to date information, such as traffic, weather and sports, that is of interest to each particular user, that can be displayed as a screen saver when the personal computer remains idle for a predetermined period of time. Representative multimedia terminals other than the personal computers 101 shown in Fig.1 can include a screen phone, such as a Picturephone 2500 available from AT&T Corp., a television equipped with a set top box (such as the TV Information Center available from AT&T Corp.) providing an interactive capability, or a personal digital assistant, such as a MagicLink device available from Sony.

[0007] Personal computers 101 are connected to service node 120 through a telecommunications network 110, which may include switches and other elements in local exchange carrier networks as well as interexchange carrier networks. In some embodiments of the present invention, service node 120 may be disposed within telecommunications network 110, and thus be part of either a local exchange carrier network or an interexchange carrier network.

[0008] As shown in Fig. 1, service node 120 includes a server 130 and an information feed interface 140. Server 130 is connected to personal computers 101 through telecommunications network 110, and provides the information needed to provide a display on the PC's of the type illustrated in Fig. 4 that is described in more detail below. Information feed interface 140 is connected to server 130 as well as to a plurality of information providers that may be at different remote locations. As explained below, these information providers may include, for example, a weather provider 150, a traffic provider 152 and a financial information provider 154. Commercial TCP/IP networking software may be used to provide the communications interface between server 130 and information feed interface 140.

[0009] Server 130, which may be a workstation such as the Sparc 20 available from Sun Microsystems, is arranged to perform various processes, including parsing

the information received from information providers and storing the parsed data in a database, as well as other functions described below, using a microprocessor 139 operating under the control of programs stored in a file system 137. Microprocessor 139 has access to information stored in a database 135, which stores information of the types illustrated in Fig. 2, discussed below. Information and instructions are communicated between microprocessor 139 and personal computers 101 using a first communications manager 131, which acts as a communications interface and protocol converter. Communications manager 131 includes usage profile management module 136, that provides system usage information needed for administration and billing purposes for each user. Communications manager 131 also includes database query routines 138 that are used to gain access to user data and stored information pertinent to each user. A second communication manager 133 provides a communications interface between server 130 and information feed interface 140. Communication manager 133 includes parsing routines 134 in order to break-down the information received from information feed interfaces 140 into addressable data fields (e.g., date, time, location, traffic report) and then store the data fields in the appropriate portion of database 135. Operations, administration, and maintenance (OA&M) routines 132 are also provided in server 130. These routines operate, administer, and maintain service node 120. This allows a system operator to monitor the status of service node 120, perform software/data backups and restorations, resolve operating alarms, provide usage data required for billing, and so on.

[0010] Communications manager 131 implements a data link communications protocol and an applications protocol for communication with personal computers 101 or any other multimedia terminal that is employed as an end user device. The data link communications protocol defines how "bits" are packaged, while the applications protocol defines how to interpret the bits (i.e., what is the information). This includes provision of user applications that format user application generated data so that it can be understood and displayed by the personal computer or other end user device. Formatting may be accomplished using a language such as HyperText Markup Language (HTML) commonly used by the World Wide Web.

[0011] Server 130 also includes a file system 137, which contains information and programs necessary to control and operate service node 120.

[0012] Information feed interface 140 includes a plurality of clients 142-144, each of which provide an interface to a corresponding one of the information providers 150, 152 and 154. Thus, weather client 143 is connected to and interfaces with weather provider 150, traffic client 142 is connected to and interfaces with traffic provider 152, and financial client 144 is connected to and interfaces with financial information provider 154. Each of the clients 142-144 include local processors that may be configured in one of several ways. First, the clients may periodically connect to the associated information provider and download information that is available from the provider. In this configuration, the clients can also answer calls from an information provider and receive information sent by the provider. In an alternative configuration, the clients may maintain a continuous communications link to the information provider, and either download information (service node initiated) or receive information (provider initiated). Clients 142-144 may be implemented in commercially available personal computers using commercially available communications software, such as Procomm-Plus. In either event, the client arrangement in effect insulates information providers from direct connection to users, and assures that any necessary formatting and "publishing" changes required for display by the user's display system are made.

[0013] It is to be noted here that the arrangement of 110 shown in Fig. 1 is illustrative only, and that the precise connection between the personal computers 101 or other multimedia terminal equipment used by any user and service node 120 will also depend upon the communications facility that is available to interconnect that user with service node 120. What is essential to the present invention is that information "feeds" received from multiple information sources are aggregated, reformatted and stored in the service node, for later access by a user. For example, if a particular user has an ISDN terminal, the user may be connected directly to server 130 via an ISDN line.

[0014] Referring now to Fig. 2, there is shown a block diagram illustrating the arrangement of database 135 within server 130 of Fig. 1. Generally speaking, server 130 includes a plurality of individual databases such as traffic database 171, weather database 172, and financial database 173, containing information obtained from the various information providers. Other information databases 175 may also be provided, depending upon the types of information that are available from information providers and thus can be offered to users of the system. Database 135 also contains other databases such as a user profile database 174 and usage records 176. User profile database 174 contains information for each user of the system, specifying (a) the categories or types of information services that are to be provided to that user, and (b) for those information services, the parameters that are associated with the desired information. For example, a first user may desire traffic, financial and sports information, a second user may desire weather and news information, and a third user may desire traffic, news and weather. For each of these three users, the detailed information desired may be different. Thus, the first user may desire traffic information for certain roadways, financial information for certain securities, and sports information for particular teams. The second user may desire to obtain some of the same types of information, but the details will be different. In this example,

the second user may desire local news and weather for City A, while the third user may desire news and weather for a different location, City B. The database management system in server 130 may be implemented using a commercially available relational database management system, such as Informix®.

[0015] Referring now to Fig. 3, there is shown a flow diagram illustrating one embodiment of the process used to provide customized, up to date information to a personal computer end user device 101 that accesses service node 120. Each block in Fig. 3 identifies the operations performed by personal computer 101 and by service node 120 to provide the functionality contemplated by the present invention. The steps in the process assure that when the system receives a request from a screen saver application running on a personal computer or other similar display device, the system can respond with information needed to display a screen saver that includes personalized, up to date information, such as traffic, weather and sports, that is of interest to that particular user.

[0016] The process beings in step 300, in which a determination is made as to whether the screen saver is activated, such that it requires information from the present invention. If a NO result is obtained, indicating that the screen saver is not activated, the process loops, such that step 300 is repeated until a YES result is obtained. This loop will generally continue until a user-specified period of PC inactivity has elapsed (e.g., five minutes).

[0017] When a YES result occurs in step 300, the screen saver is activated and the process for retrieving current up-to-date data is initiated by proceeding to step 301, in which a communication session is established between personal computer 101 and service node 120. This step may also be triggered after the screen saver has been active for a user-specified period of time (e. g., fifteen minutes). In both cases personal computer 101 is arranged to generate a query or transmit a message to service node 120, typically by dialing a predefined telephone number. Service node 120 is arranged to answer the call and send a "challenge" message to personal computer 101. In turn, personal computer 101 responds with an acknowledgment message, which is sent back to service node 120.

[0018] Once a communication session is established in step 301, a determination is made in step 303 as to whether two-way communications are enabled between a personal computer 101 and service node 120. If not, an error condition exists, and the process proceeds to step 305, in which personal computer 101 terminates the connection to service node 120 and displays an appropriate error message to the user. Concurrently, service node 120 terminates the partially established communication session. At this point, the PC screen saver may attempt to re-initiate communications, as by repeating the process of step 301.

[0019] If a YES result is obtained in step 303, the process proceeds to step 307, in which the user identification number (ID) is validated, or another validation process is performed. In this step, personal computer 101 sends the prestored user ID to service node 120, whereupon service node 120 checks the ID against stored information in database 135 to determine its validity. Depending upon the outcome, service node 120 sends a valid ID or invalid ID message to personal computer 101.

[0020] It is to be noted here that information is stored in database 135 when a user initially arranges to use the display system of the present invention. At that time, a personalized user profile is established, indicating (a) the categories or types of information that the user desires to receive, such as sports information, weather, investment advisories, and so on, and (b) parameters that specify, for that user, the exact information desired to be received in each category. The profile may be created in a number of ways, such as by communicating with an interactive voice platform such as a Conversant® voice response system available from AT&T Corp., or by using a PC application to select desired service options.

[0021] If the ID transmitted by the PC screen saver is not valid, the process continues with a NO result in step 309 and proceeds to step 311, where the error condition is dealt with. In that step, both personal computer 101 and service node 120 terminate the existing communications session, and personal computer 101 displays an appropriate message to the user..

[0022] If the ID transmitted by the PC screen is valid, the process continues with a YES result in step 309 and proceeds to step 313, in which the user's personalized information is retrieved from data base 135. In this step, personal computer 101 requests the personalized information from service node 120, service node 120 accesses the user's profile, and queries data base 135 for the specific information desired by this user, based upon the profile information.

[0023] Next, in step 315, the user's personalized information is appropriately formatted. In this step, the information retrieved in step 313 is actually transmitted from service node 120 to personal computer 101.

[0024] In step 317, a determination is then made as to whether an error condition has occurred with respect to the retrieval, formatting and transmission of information to the user. If a YES result is obtained, indicating an error, the process proceeds to step 319, which, like step 311, results in both personal computer 101 and service node 120 terminating the existing communications session, and personal computer 101 displaying an appropriate message to the user.

[0025] Following step 317, if an error condition has not occurred, the process proceeds to step 321, in which the communication session between service node 120 and personal computer 101 is terminated. In this step, personal computer 101 sends a terminate session message to service node 120, whereupon service node 120 and personal computer 101 both terminate the communication session. In step 323, the information retrieved

in step 313 and formatted in step 315 is displayed on the user's personal computer 101, in the context of the PC screen saver without interrupting the screen saver function.

[0026] It is important to note that the screen saver function remains active throughout all the steps illustrated in Fig. 3 and that all these steps take place automatically, that is without user input.

[0027] Referring now to Fig. 4, there is shown an example of an "At-A-Glance" screen saver display which integrates personalized information obtained from a variety of user-specified services using the present invention. The display integrates information from a variety of user-specified services, and presents the user with valuable information without being required to navigate through a series of menus. As shown, a series of screen areas 401-406 "float" or randomly move throughout the display area 400, preferably without interfering with or covering each other. Each of the display areas contain different information, relating to topics selected by the user, including, in this example, weather (areas 402 and 403), traffic (area 401), news (area 405), financial (area 404) and other information (area 406), in this case pertaining to communications messages waiting for the user. The information displayed in areas 401-406 is up-to-date, since it was recently obtained from service node 120, and it is customized, in that the information within each of the areas 401-406 was selected by the user and set forth in his or her profile. As the data is updated, the screen saver remains active and the screen saver motion is not interrupted. Numerous variations of the screen saver user presentation are possible.

[0028] Various modifications and adaptations of the present invention will be apparent to persons skilled in the art. For example, instead of pre-stored profiles for individual users, the system can be arranged to make intelligent selection of "default" profiles, based on factors that can be ascertained even about a new user, such as the user's location from which a request is initiated. Thus, a user calling service node 120 from a telephone located in New Jersey will, unless different information is requested, automatically receive information about traffic and weather conditions in New Jersey. This allows the system to customize information even for users who have not stored or pre-specified a profile. Accordingly, it is intended that the invention be limited only by the appended claims.

Claims

1. A system for displaying to a user personalized time-varying information as a screen saver on a visual display device (101), the system comprising:

   a visual display device (101) provided with a screen saver; and
   a service node (120) connected to said visual display device (101),

   characterised in that the service node includes:

   a) a database (135);
   b) a first communications manager (133) for storing information in said database;
   c) an information feed interface (140) arranged to obtain information from one or more information providers (150-154) and to pass said information to said first communications manager (133) which stores said information in said database (135);
   d) a user profile manager (136) for maintaining a user profile for each user of said system, said user profile manager containing information specific to the user which indicates particular stored information in said database (135) to be provided to the user; and

   a second communications manager (131) for downloading said particular stored information to said visual display device (101) for display in said screen saver; and

   wherein said visual display device (101) is arranged to make a connection to said service node (120) for downloading said particular stored information and to display said downloaded particular information as a screen saver, whenever said screen saver is activated.

2. A system as claimed in claim 1 wherein said service node (120) is disposed in a telecommunications network (110).

3. A system as claimed in any preceding claim wherein said communications manager (131) is arranged to perform said downloading in response to a command from said visual display device (101).

4. A system as claimed in any preceding claim, wherein said visual display device (101) is a personal computer.

5. A system as claimed in any preceding claim, wherein said information obtained by the information feed interface (140) is aggregated, re-formatted and stored in the service node (120) for later access by the user.

6. A system as claimed in any preceding claim, wherein said user profile (136) specifies a) the categories of information services to be provided to the user, and b) for those information services, the parameters associated with the desired information.

7. A system as claimed in any preceding claim, wherein said user profile (136) contains user identification

data which must be validated before said particular stored information is downloaded to said visual display device (101).

8. A system as claimed in any preceding claim, wherein a number of screen areas (401-406) float throughout the display area of the visual display device (101) when said screen saver is activated.

9. A method of using a system as claimed in any one of claims 1 to 8 for displaying personalized time-varying information as a screen saver on said visual display device (101), the method comprising the steps of:

obtaining information from one or more information providers (150-154) and storing said information in said database (135);
maintaining a profile (136) for each user of said system, said profile (136) indicating particular stored information in said database (135) to be provided to said each user;
downloading said particular stored information to said visual display device (101); and
displaying said particular stored information on said visual display device (101) whenever the screen saver is activated.

10. A computer readable medium carrying a computer program arranged to carry out the method of claim 9.

Patentansprüche

1. System, um einem Benutzer personalisierte, sich zeitlich verändernde Information als einen Bildschirmschoner auf einer visuellen Anzeigeeinrichtung (101) anzuzeigen, wobei das System umfasst:

eine visuelle Anzeigeeinrichtung (101), die mit einem Bildschirmschoner versehen ist; und

einen Dienstknoten (102), der mit der visuellen Anzeigeeinrichtung (101) verbunden ist,

dadurch gekennzeichnet, dass der Dienstknoten einschließt:

a) eine Datenbank (135);

b) einen ersten Kommunikationsmanager (133) zum Speichern von Information in der Datenbank;.

c) eine Informationszuführungsschnittstelle (140), die angeordnet ist, um Information von ein oder mehreren Informationsbereitstellern (150-154) zu erhalten und die Information an den ersten Kommunikationsmanager (133) zu übergeben, der die Information in der Datenbank (135) speichert;

d) einen Benutzerprofilmanager (136) zum Aufrechterhalten eines Benutzerprofils für jeden Benutzer des Systems, wobei der Benutzerprofilmanager für den Benutzer spezifische Information enthält, die eine bestimmte gespeicherte Information in der Datenbank (135) anzeigt, die dem Benutzer bereitgestellt werden soll; und

einen zweiten Kommunikationsmanager (131) zum Herunterladen der bestimmten gespeicherten Information an die visuelle Anzeigeeinrichtung (101) für eine Anzeige in dem Bildschirmschoner; und

wobei die visuelle Anzeigeeinrichtung (101) angeordnet ist, um eine Verbindung zu dem Dienstknoten (120) herzustellen, um die bestimmte gespeicherte Information herunterzuladen und die heruntergeladene bestimmte Information als einen Bildschirmschoner immer dann anzuzeigen, wenn der Bildschirmschoner aktiviert wird.

2. System nach Anspruch 1, wobei der Dienstknoten (120) in einem Telekommunikationsnetz (110) angeordnet ist.

3. System nach irgendeinem vorangehenden Anspruch, wobei der Kommunikationsmanager (131) angeordnet ist, um das Herunterladen im Ansprechen auf einen Befehl von der visuellen Anzeigeeinrichtung (101) auszuführen.

4. System nach irgendeinem vorangehenden Anspruch, wobei die visuelle Anzeigeeinrichtung (101) ein Personalcomputer ist.

5. System nach irgendeinem vorangehenden Anspruch, wobei die Information, die von der Informationszuführungsschnittstelle (140) erhalten wird, in dem Dienstknoten (120) für einen späteren Zugriff durch den Benutzer zusammengestellt, neu formatiert und gespeichert wird.

6. System nach irgendeinem vorangehenden Anspruch, wobei das Benutzerprofil (136) a) die Kategorien von Informationsdiensten, die dem Benutzer bereitgestellt werden sollen, und b) für diese Informationsdienste die Parameter, die zu der gewünschten Information gehören, spezifiziert.

7. System nach irgendeinem vorangehenden Anspruch, wobei das Benutzerprofil (136) Benutzeridentifikationsdaten enthält, die validiert werden

müssen, bevor die bestimmte gespeicherte Information an die visuelle Anzeigeeinrichtung (101) heruntergeladen wird.

8. System nach irgendeinem vorangehenden Anspruch, wobei eine Anzahl von Schirmgebieten (401-406) überall in dem Anzeigegebiet der visuellen Anzeigeeinrichtung (101) herumschweben, wenn der Bildschirmschoner aktiviert ist.

9. Verfahren zum Verwenden eines Systems nach irgendeinem der Ansprüche 1 bis 8 zum Anzeigen von personalisierter, sich zeitlich ändernder Information als einen Bildschirmschoner auf der visuellen Anzeigeeinrichtung (101), wobei das Verfahren die folgenden Schritte umfasst:

Erhalten von Information von einem oder mehreren Informationsbereitstellern (150-154) und Speichern der Information in der Datenbank (135);

Aufrechterhalten eines Profils (136) für jeden Benutzer des Systems, wobei das Profil (136) bestimmte gespeicherte Information in der Datenbank (135) anzeigt, die für jeden besagten Benutzer bereitgestellt werden soll;

Herunterladen der bestimmten gespeicherten Information an die visuelle Anzeigeeinrichtung (101); und

Anzeigen der bestimmten gespeicherten Information auf der visuellen Anzeigeeinrichtung (101) immer dann, wenn der Bildschirmschoner aktiviert wird.

10. Von einem Computer lesbares Medium, welches ein Computerprogramm trägt, welches angeordnet ist, um das Verfahren nach Anspruch 9 auszuführen.

Revendications

1. Système pour afficher pour un utilisateur une information variant temporellement personnalisée en tant qu'économiseur d'écran sur un dispositif d'affichage visuel (101), le système comprenant:

un dispositif d'affichage visuel (101) muni d'un économiseur d'écran; et

un noeud de service (120) qui est connecté audit dispositif d'affichage visuel (101),

caractérisé en ce que le noeud de service inclut:

a) une base de données (135);

b) un premier gestionnaire de communication (133) pour stocker une information dans ladite base de données;

c) une interface d'application d'information (140) qui est agencée pour obtenir une information à partir d'un ou de plusieurs fournisseurs d'information (150-154) et pour passer ladite information audit premier gestionnaire de communication (133), lequel stocke ladite information dans ladite base de données (135);

d) un gestionnaire de profil utilisateur (136) pour maintenir un profil utilisateur pour chaque utilisateur dudit système, ledit gestionnaire de profil utilisateur contenant une information qui est spécifique à l'utilisateur, laquelle information indique une information stockée particulière dans ladite base de données (135) destinée à être fournie à l'utilisateur; et

un second gestionnaire de communication (131) pour décharger ladite information stockée particulière sur ledit dispositif d'affichage visuel (101) pour un affichage dans ledit économiseur d'écran; et

dans lequel ledit dispositif d'affichage visuel (101) est agencé pour réaliser une connexion sur ledit noeud de service (120) pour décharger ladite information stockée particulière et pour afficher ladite information particulière déchargée en tant qu'économiseur d'écran chaque fois que ledit économiseur d'écran est activé.

2. Système selon la revendication 1, dans lequel ledit noeud de service (120) est disposé dans un réseau de télécommunication (110).

3. Système selon l'une quelconque des revendications précédentes, dans lequel ledit gestionnaire de communication (131) est agencé pour réaliser ledit déchargement en réponse à une commande en provenance dudit dispositif d'affichage visuel (101).

4. Système selon l'une quelconque des revendications précédentes, dans lequel ledit dispositif d'affichage visuel (101) est un ordinateur personnel.

5. Système selon l'une quelconque des revendications précédentes, dans lequel ladite information qui est obtenue par l'interface d'application d'information (140) est agréguée, reformatée et stockée dans le noeud de service (120) en vue d'un accès ultérieur par l'utilisateur.

6. Système selon l'une quelconque des revendica-

tions précédentes, dans lequel ledit profil d'utilisateur (136) spécifie a) les catégories de services d'information destinés à être fournis à l'utilisateur et b) pour ces services d'information, les paramètres qui sont associés à l'information souhaitée.

7. Système selon l'une quelconque des revendications précédentes, dans lequel ledit profil d'utilisateur (136) contient des données d'identification d'utilisateur qui doivent être validées avant que ladite information stockée particulière ne soit déchargée sur ledit dispositif d'affichage visuel (101).

8. Système selon l'une quelconque des revendications précédentes, dans lequel un certain nombre de zones d'écran (401-406) flottent sur toute la zone d'affichage du dispositif d'affichage visuel (101) lorsque ledit économiseur d'écran est activé.

9. Procédé d'utilisation d'un système selon l'une quelconque des revendications 1 à 8 pour afficher une information variant temporellement personnalisée en tant qu'économiseur d'écran sur ledit dispositif d'affichage visuel (101), le procédé comprenant les étapes de:

obtention d'une information à partir d'un ou de plusieurs fournisseurs d'information (150-154) et stockage de ladite information dans ladite base de données (135);

maintien d'un profil (136) pour chaque utilisateur dudit système, ledit profil (136) indiquant une information stockée particulière dans ladite base de données (135), laquelle est destinée à être fournie à chaque dit utilisateur;

déchargement de ladite information stockée particulière sur ledit dispositif d'affichage visuel (101); et

affichage de ladite information stockée particulière sur ledit dispositif d'affichage visuel (101) chaque fois que l'économiseur d'écran est activé.

10. Support lisible par ordinateur supportant un programme d'ordinateur agencé pour la mise en oeuvre du procédé selon la revendication 9.

FIG. 1

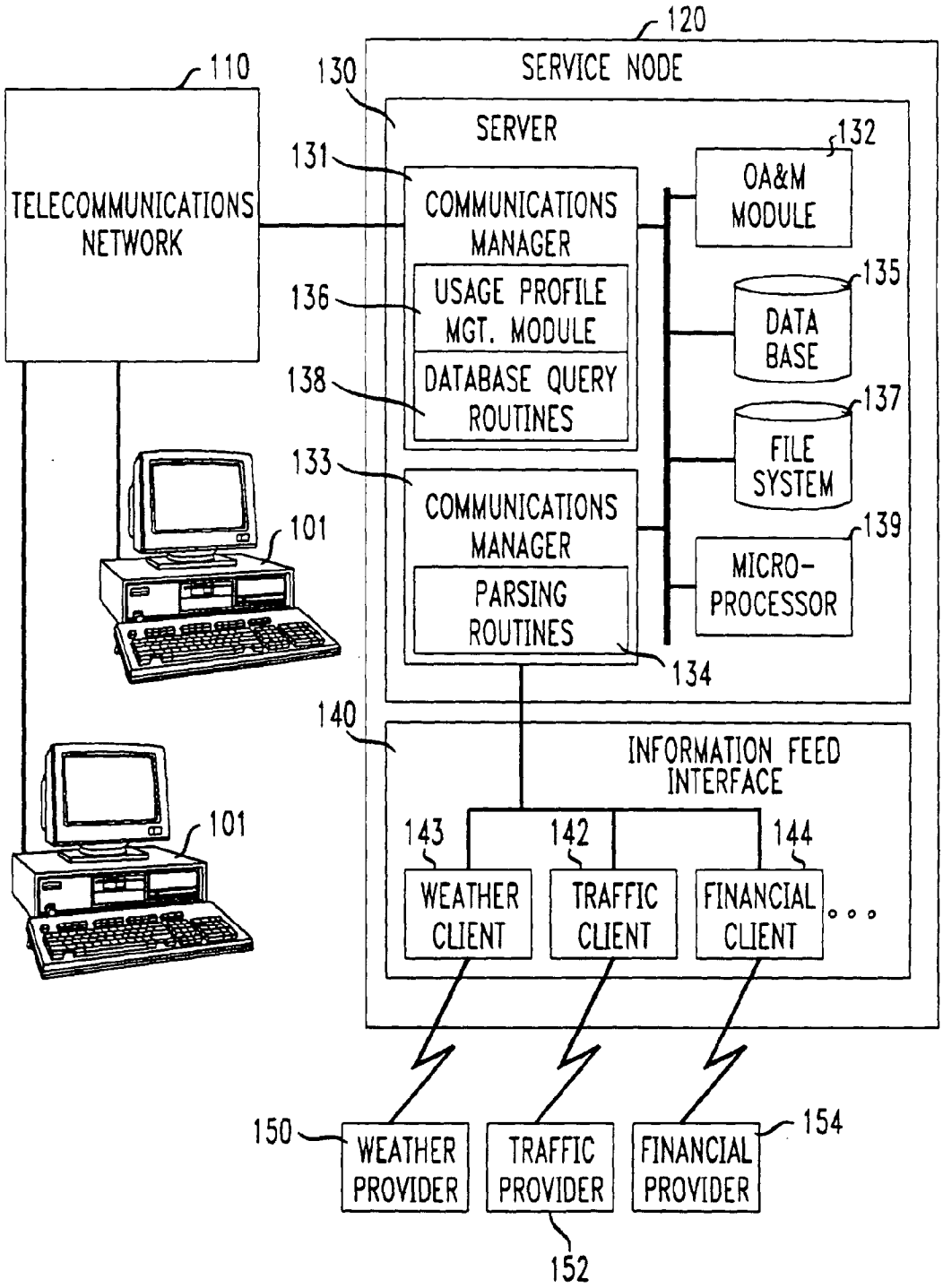
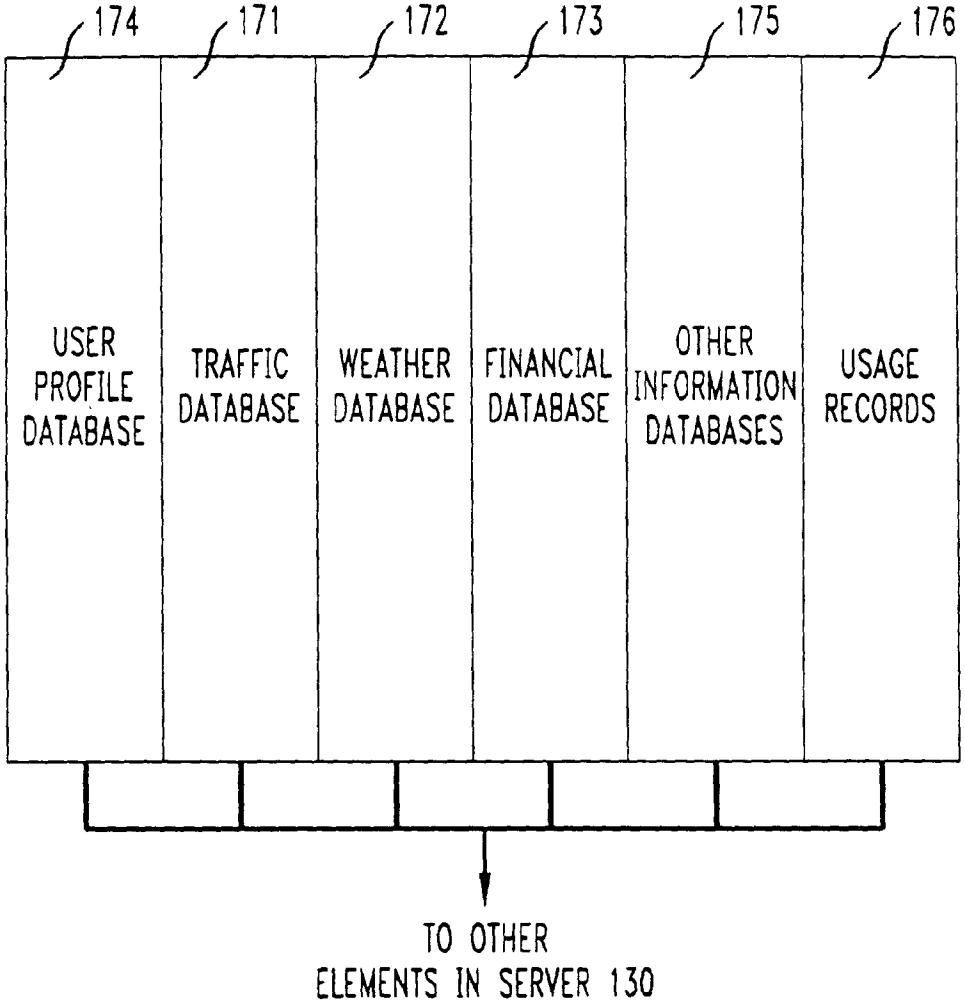

120
SERVICE NODE
110
130
SERVER
131
132
TELECOMMUNICATIONS NETWORK
COMMUNICATIONS MANAGER
OA&M MODULE
136
USAGE PROFILE MGT. MODULE
135
DATA BASE
138
DATABASE QUERY ROUTINES
137
FILE SYSTEM
133
COMMUNICATIONS MANAGER
101
139
MICRO-PROCESSOR
PARSING ROUTINES
134
140
INFORMATION FEED INTERFACE
101
143
142
144
WEATHER CLIENT
TRAFFIC CLIENT
FINANCIAL CLIENT
150
WEATHER PROVIDER
TRAFFIC PROVIDER
FINANCIAL PROVIDER
154
152

FIG.2


174
171
172
173
175
176
USER PROFILE DATABASE
TRAFFIC DATABASE
WEATHER DATABASE
FINANCIAL DATABASE
OTHER INFORMATION DATABASES
USAGE RECORDS
TO OTHER ELEMENTS IN SERVER 130

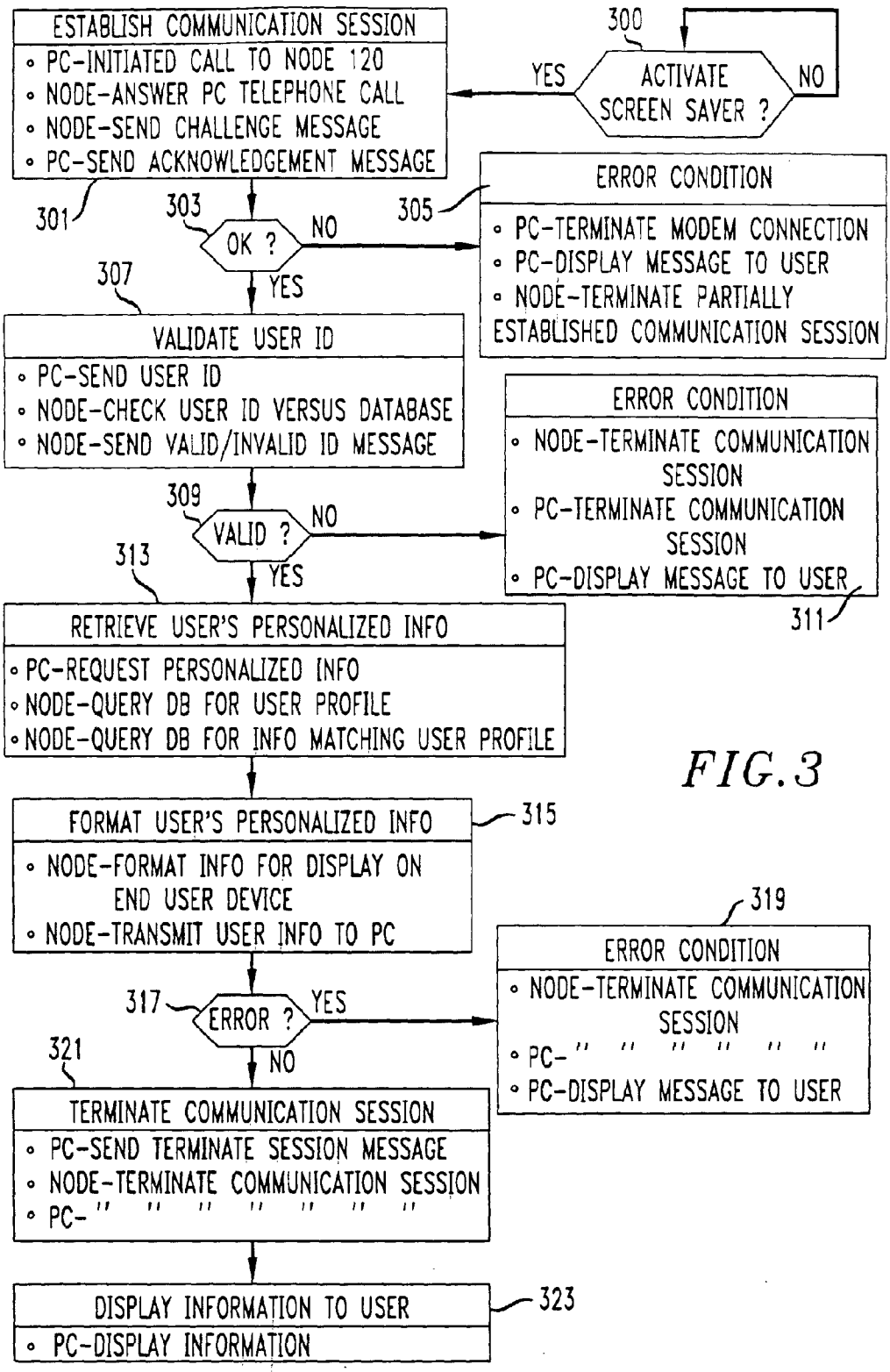
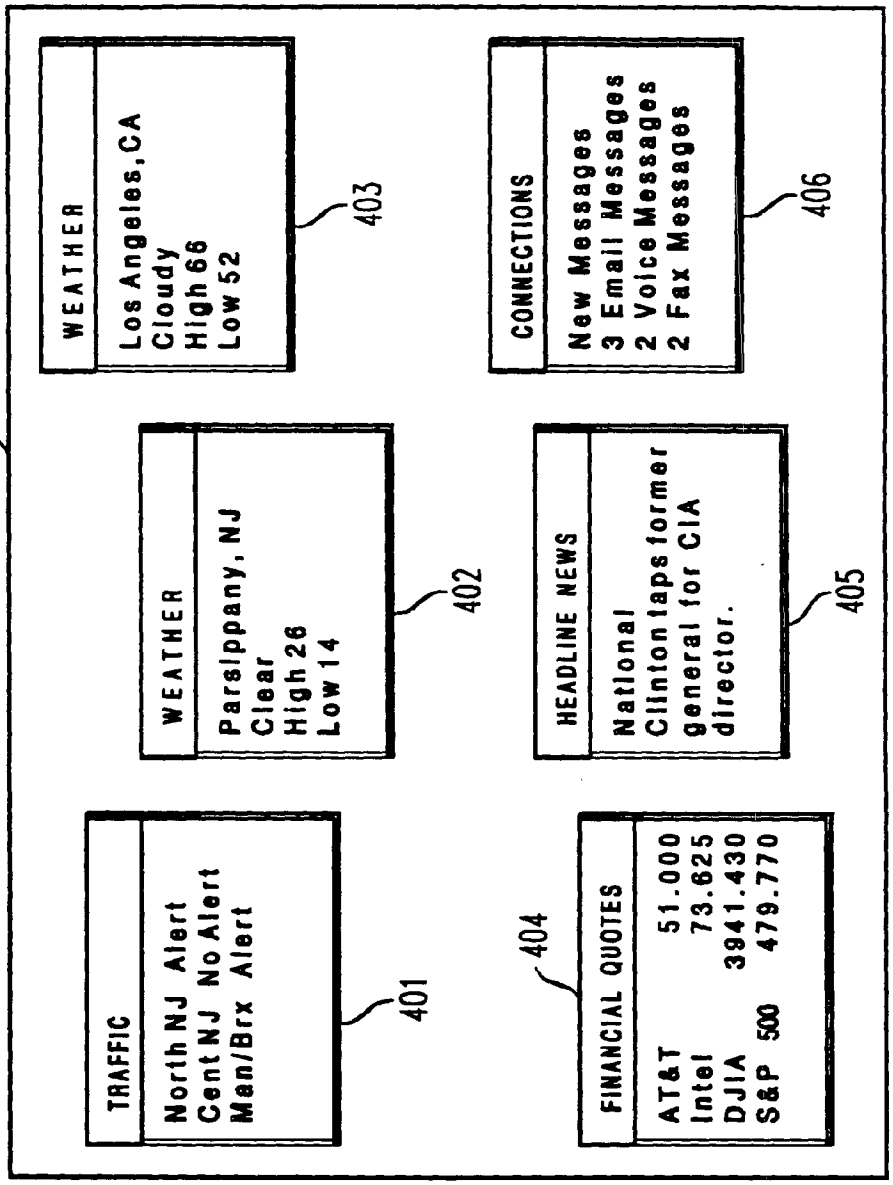

ESTABLISH COMMUNICATION SESSION
• PC-INITIATED CALL TO NODE 120
• NODE-ANSWER PC TELEPHONE CALL
• NODE-SEND CHALLENGE MESSAGE
• PC-SEND ACKNOWLEDGEMENT MESSAGE
301
300
ACTIVATE SCREEN SAVER ?
YES
NO
303
OK ?
NO
YES
305
ERROR CONDITION
• PC-TERMINATE MODEM CONNECTION
• PC-DISPLAY MESSAGE TO USER
• NODE-TERMINATE PARTIALLY ESTABLISHED COMMUNICATION SESSION
307
VALIDATE USER ID
• PC-SEND USER ID
• NODE-CHECK USER ID VERSUS DATABASE
• NODE-SEND VALID/INVALID ID MESSAGE
309
VALID ?
NO
YES
311
ERROR CONDITION
• NODE-TERMINATE COMMUNICATION SESSION
• PC-TERMINATE COMMUNICATION SESSION
• PC-DISPLAY MESSAGE TO USER
313
RETRIEVE USER'S PERSONALIZED INFO
• PC-REQUEST PERSONALIZED INFO
• NODE-QUERY DB FOR USER PROFILE
• NODE-QUERY DB FOR INFO MATCHING USER PROFILE
315
FORMAT USER'S PERSONALIZED INFO
• NODE-FORMAT INFO FOR DISPLAY ON END USER DEVICE
• NODE-TRANSMIT USER INFO TO PC
317
ERROR ?
YES
NO
319
ERROR CONDITION
• NODE-TERMINATE COMMUNICATION SESSION
• PC-
• PC-DISPLAY MESSAGE TO USER
321
TERMINATE COMMUNICATION SESSION
• PC-SEND TERMINATE SESSION MESSAGE
• NODE-TERMINATE COMMUNICATION SESSION
• PC-
323
DISPLAY INFORMATION TO USER
• PC-DISPLAY INFORMATION

FIG.3

FIG. 4


499
TRAFFIC
North NJ Alert
Cent NJ No Alert
Man/Brx Alert
401
WEATHER
Parsippany, NJ
Clear
High 26
Low 14
402
WEATHER
Los Angeles, CA
Cloudy
High 66
Low 52
403
FINANCIAL QUOTES
AT&T 51.000
Intel 73.625
DJIA 3941.430
S&P 500 479.770
404
HEADLINE NEWS
National
Clinton taps former
general for CIA
director.
405
CONNECTIONS
New Messages
3 Email Messages
2 Voice Messages
2 Fax Messages
406